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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,756	03/29/2006	Katsumi Uehara	062709-0165	3990

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FOLEY AND LARDNER LLP
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WASHINGTON, DC 20007

EXAMINER

WEINSTEIN, LEONARD J

ART UNIT	PAPER NUMBER
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3746

MAIL DATE	DELIVERY MODE
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06/06/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/573,756	Applicant(s) UEHARA ET AL.	
	Examiner LEONARD J. WEINSTEIN	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,7,12 and 13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,7,12 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 13, 2008 has been entered.

2. The examiner acknowledges the amendments to claim 1.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Iverson 6,006,785. Iverson teaches all the limitations as claimed for a compressor including: **(claim 1)** a cylinder block 1 which has a cylinder bore 2 to accommodate a piston 28, a crank chamber, not shown but known in the art be a common component of an axial piston compressor as disclosed (col. 1 ll. 5-14), which is provided at one end of the cylinder block 1, a suction chamber and a discharge chamber, neither shown but each known in the art be a common component of an axial piston compressor, that are provided at the other end of the cylinder block 1, a valve, as defined by elements 5, 6, 7, 10, 13, and 15, that is provided between the cylinder bore 1 and the suction chamber, as defined by a chamber that would be in communication with suction hole element 8 as is known in the art to be common to an axial piston compressor but not shown, and between the cylinder bore 1 and the discharge chamber,

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as defined by a chamber that would be in communication with a discharge hole element 9 as is known in the art to be common to an axial piston compressor but not shown, a valve plate 7 provided with the valve, elements 5, 6, 7, 10, 13, and 15, and having a suction hole 8 to communicate between the cylinder bore 1 and the suction chamber (not shown) and a discharge hole 9 to communicate between the cylinder bore 1 and the discharge chamber (not shown), a suction valve 15 provided with the valve, elements 5, 6, 7, 10, 13, and 15, and assembled to the side of the cylinder bore 1 of the valve plate 7, and the suction valve 15 is comprised of a flexible plate 18 to be able to open and close the suction hole 8, a drive shaft, not shown but known in the art to a component of an axial piston compressor as disclosed, that is rotatably and axially supported within the crank chamber (not shown) to reciprocally actuate the piston 28 (col. 3 ll. 55-57), and a valve structure, as shown in figure 1 and defined by elements 16, 17, 18, and 19, in which the suction valve 15 is formed with a suction valve main body 18 and an opposing part 17, wherein the opposing part 17 that is integrally formed on the suction valve main body 18, and faces the suction hole 8 and a valve seat, as defined by elements 5 and 6, at the opening edge of the suction hole 8 so as to be able to open and close the suction hole 8, a coating layer 10 having a predetermined thickness coated on at least one of the valve plate body 7, as defined by portion of element 10 surrounding elements 12 and 13 which covers element 7 on an underside and creates a clearance between a suction valve 15 and a cylinder block element 1 as shown in figure 7, excluding the valve seat, elements 5 and 6, and the suction valve main body 18 so as to form a predetermined clearance between the opposing part 18 and the valve seat, as defined by elements 5 and 6, as defined by the situation when element 17 abuts element 25 on an opposite side of element 17 from that of the valve seat formed by elements 5 and 6 when a suction hole is closed – there also a space

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between element 18 and element 5 of the valve, as interpreted by the examiner, as shown in figure 7 for the situation when a suction hole is opened; **(claim 7)** and an upper surface of the valve seat, elements 5 and 6, is chamfered or rounded, as defined by sloping ramp element 6 and elements 20, 21, and 22 (col. II. 34-37).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al. 6,318,980 in view of Iverson. Kurihara teaches all the limitations as claimed for a compressor including: **(claim 1)** a cylinder block (fig. 1), a crank chamber, defined by elements 30 and 27 as shown in figure 1, a cylinder bore 71 to accommodate a piston 46, a suction chamber 72, a discharge chamber 70, a valve 22 provided between a cylinder bore 71 and a suction chamber 72 and a discharge chamber 70, a valve plate 21 provided with the valve 22 (suction valve) and having a suction hole 25 to communicate between the cylinder bore 71 and the suction chamber 72 and a discharge hole 24 to communicate between the cylinder bore

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71 and the discharge chamber 70, a suction valve 22 provided with the valve and assembled to the side of the cylinder bore 71 of the valve plate 21, and the suction valve 22 is comprised of a flexible plate as shown in figure 27, to be able to open and close the suction hole 25; and a drive shaft 34 axially and rotatably supported in a crank chamber to reciprocate a piston 46 as shown in figure 1; **(claim 12)** and a valve plate 21 including a plurality of suction holes 25 as shown in figure 26 with reference to the embodiment of figure 27, equally space on an outer periphery of a valve plate 21 but fails to teach the valve structure. Kurihara fails to teach the following limitation that is taught by Iverson for a compressor having a valve structure, as shown in figure 1 and defined by elements 16, 17, 18, and 19, in which the suction valve 15 is formed with a suction valve main body 18, and an opposing part 17 that is integrally formed on the suction valve main body 18, and faces the suction hole 8 and a valve seat, as defined by elements 5 and 6, at the opening edge of the suction hole 8 so as to be able to open and close the suction hole 8, and clearance forming means (col. 3 ll. 19-24), comprising a coating layer 10 having a predetermined thickness coated on at least one of the valve plate main body 7, as defined by portion of element 10 surrounding elements 12 and 13 which covers element 7 on an underside and creates a clearance between a suction valve 15 and a cylinder block element 1 as shown in figure 7, excluding the valve seat, elements 5 and 6, at the opening edge of the suction hole 8 and the suction valve main body 18. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify a suction valve main body and hole to be provide a clearance between a valve main body and a valve plate or a cylinder block, in order to provide a valve structure that would facilitate a flow of gas refrigerant into a compression chamber directed toward the middle of a cylinder wherein a piston reciprocates to decrease the heating of a gas increase a degree of fill (Iverson – col. 1 ll. 60-67).

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8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iverson US 6,006,785 in view of Kurze et al. US 5,487,825. Iverson discloses the claimed invention except for a coating layer comprised of fluorine. Kurze teaches that ceramic fluorine polymer layers can be layered on to metal alloys to protect an alloy, resist corrosion, and reduce wear of machine parts that are layered with the polymer. One such application disclosed by Kurze is a compressor wheel (Kurze - col. 6 ll. 24-29). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a coating layer in valve configuration for the suction hole of a compressor, as taught by Iverson, that comprises at least one polymer layer comprising fluorine as taught by Kurze, in order to provide a protective clearance means that is corrosion and wear resistant (Kurze - col. 2 ll. 15-19).

Response to Arguments

9. Applicant's arguments filed March 13, 2008 have been fully considered but they are not persuasive. The rejections have been modified to incorporate the changes made to claims in the amendment of March 13, 2008.

With regards to the rejection of claims 1 and 7 under 35 U.S.C. 102(b) as anticipated by Iversen US 6,006,785, the applicant argues that Iversen does not provide a clearance means on a surface that is opposed to a valve seat. The applicant argues that element 25 of Iversen should be interpreted a teaching for a valve seat and further because a sealing plate 10 cannot form a clearance between a valve seat 25 and an opposed surface of a leaf spring 15. With respect to applicant's argument that Iversen does not teach a clearance means on a surface that is opposed to a valve seat, the examiner disagrees. Given the broadest reasonable interpretation a valve seat can be interpreted to be a surface or structure that a valve element such as ball, a leaf spring, or an end of a plunger, comes to rest upon during some point in the

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operation/actuation of a valve. The term is not restricted exclusively to a structure that provides a stop for a valve member in a closed state or exclusively to a structure that provides such a resting structure when a valve member is in an open state. It is thus noted by the examiner that the limitations as claimed are sufficiently broad to encompass the interpretation of the bearing surfaces of element 5 and 6 as forming a valve seat which a valve member 17 rests upon when the valve member 17 is in an open position as shown in figure 7. The bottom surface of element 17 opposes elements 5 and 6 and is separated from those surfaces by the seating plate (coating layer) designated as element 10.

The examiner further notes that the limitations do not require a valve seat and suction hole to be one the same side of an "opposing part." The limitations require that an opposing part faces each of a valve seat and a suction hole, but there is no requirement for a single section or surface of the opposing part to face both of these elements. Thus as taught by Iversen an opposing part 18 faces a valve seat, as defined by the bearing surfaces of elements 5 and 6, with a bottom surface and faces a suction hole 8 with a top surface. The claims require that an opposing part face both a valve seat and a suction hole at an opening edge of the suction hole. The closure 17 (opposing part) of Iversen begins right at the edge of the suction hole 8, at this point it faces a suction hole with a top surface and faces the bearing surface 6 of the valve seat, defined by elements 5 and 6 as discussed, with a bottom surface. Therefore the limitations as claimed are taught by Iversen.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEONARD J. WEINSTEIN whose telephone number is (571)272-9961. The examiner can normally be reached on Monday - Thursday 7:00 - 5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit
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/Leonard J Weinstein/
Examiner, Art Unit 3746